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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,559	09/15/2003	David Darden Chambliss	SJO920030006US1	3819

46917 7590 03/04/2008
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EXAMINER

GOODCHILD, WILLIAM J

ART UNIT	PAPER NUMBER
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2145

MAIL DATE	DELIVERY MODE
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03/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 02/15/2008, with respect to Final Rejection sent 10/15/2007 have been fully considered and are persuasive. The final rejection of 10/15/2007 has been withdrawn.
2. Applicant's arguments with respect to claims 1-15, 17-28, 30-49 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-5, 8-12, 17-19, 21-23, 25-28, 30-31, 33-35, 38-42 and 46-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guha, (US Publication No. 2002/0194324), and further in view of Ng et al., (US Publication No. 2004/0049564), (hereinafter Ng).

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In reference to claims 1, 19, 31 and 47, Guha teaches a method / system comprising: a processing unit [paragraph 38, computer contains a processor]; providing an application service connection definition for each of the I/O paths from a host to a storage volume [paragraphs 49 and 57, SLA is created with a definition of a metric to monitor and providing performance criteria to monitor]; providing at least one service level guarantee definition indicating performance criteria to satisfy service requirements included in at least one service level agreement with at least one customer for network resources [paragraphs 49 and 57, SLA is created with a definition of a metric to monitor and providing performance criteria to monitor]; associating each service level guarantee definition with at least one application service connection definition [paragraphs 49 and 57, SLA is created with a definition of a metric to monitor and providing performance criteria to monitor]; gathering, I/O performance data for I/O requests transmitted through the I/O paths [paragraph 45, lines 10-15 and paragraph 60 and 62]; transmitting, the gathered performance data to a service level agreement server [paragraphs 60 and 69]; monitoring, by the service level agreement server, whether the performance data for the I/O requests transmitted through the I/O paths satisfy the performance criteria indicated in the service level guarantee definition associated with the application service connection definitions for the I/O path [paragraph 44]; transmitting, by the service level agreement server, commands to throttle I/O transmission over at least one connection in response to determining that the performance data for at least one connection does not satisfy the performance criteria [paragraph 69]. Guha fails to disclose a virtualization controller mapping physical storage resources to virtual volumes in a virtualization layer.

However, Ng, in the same field of endeavor discloses virtualization controllers which make one or more physical disks appear as one or more LUNs. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a virtualization controller to make one or more physical disks appear as one or more LUNs in order to achieve location independence by abstracting the physical location of the data.

In reference to claims 3, 21, 33 and 48, Guha further discloses the method / system of claims 1, 19, 31 and 47 wherein: multiple service level guarantee definitions indicating different performance criteria are associated with different sets of application service connection definitions [paragraph 49].

In reference to claims 4, 22 and 34, Guha further discloses the method / system of claims 3, 21 and 33 wherein: the application service definition for the I/O paths may be associated with the multiple service level guarantee definitions [paragraph 49], wherein the monitoring comprises determining whether the I/O requests transmitted through the I/O paths satisfy the performance criteria of all associated service level guarantee definitions [paragraph 49].

In reference to claims 5, 23, 35 and 49, Guha further discloses the method / system of claims 1, 19, 31 and 47 wherein: providing an application service group identifying a plurality of application service connection definitions, wherein associating the at least

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one service level guarantee definition with the application service connection definitions comprises associating the at least one service level guarantee definition with the at least one application service group [paragraph 14], wherein the application service connection definitions identified in the application service group are associated with the service level guarantee definition with which their application service group is associated [paragraph 14].

In reference to claims 8, 25 and 38, Guha further discloses the method / system of claims 1, 19 and 31 wherein: monitoring whether the I/O requests transmitted through the I/O path satisfy performance criteria indicated in the service level guarantee definition [paragraph 44] comprises: gathering performance information concerning I/O requests for the I/O paths [paragraph 45, lines 10-15 and paragraph 60 and 62]; selecting one of the at least one service level guarantee definition [paragraphs 45, 60 and 62]; and for each of the I/O paths identified by the application service connection definition associated with the selected service level guarantee definition, comparing the gathered performance information for the I/O path with the performance criteria indicated in the selected service level guarantee definition [paragraphs 45, 60 and 62].

In reference to claims 9, 26 and 39, Guha further discloses the method / system of claims 8, 25 and 38 wherein: adjusting operations among the I/O paths represented by the application service connection definitions associated with the selected service level

guarantee definition if the gathered performance information for the I/O paths does not satisfy the performance criteria [paragraphs 45 and 49].

In reference to claims 10, 27 and 40, Guha further discloses the method / system of claims 9, 26 and 39 wherein: adjusting the operations comprises: determining the I/O paths that are over performing and under performing with respect to the performance criteria [paragraph 44]; and throttling the transmission of the I/O requests through the determined I/O paths that are over performing paragraph 62].

In reference to claims 11 and 41, Guha further discloses the method / system of claims 10 and 40 wherein: throttling the transmissions comprises delaying the processing of the I/O requests transmitted through the over performing I/O paths [paragraph 69].

In reference to claims 12, 28 and 42, Guha further discloses the method / system of claims 8, 25 and 38 wherein: the gathering of the performance information for the I/O paths comprises determining an I/O response time and I/O demand at the I/O paths and comparing the determined I/O response time and the I/O demand with the performance criteria for the I/O response time and the I/O demand in the selected service level guarantee definition [paragraph 69].

In reference to claim 17, Guha further discloses the method / system of claim 1 wherein: the network comprises a Storage Area Network (SAN) [paragraph 40].

In reference to claims 18, 30 and 46, Guha further discloses the method / system of claims 1, 19 and 31 wherein: the at least one application service connection definition, the at least one service level agreement, and the at least one service level guarantee definition, are provided by the service level agreement server in a web service architecture that interfaces with a client to provide real time performance information on the I/O paths to the client [paragraph 39].

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 7, 20, 24, 32 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guha-Ng as applied to claims 1, 5, 19, 23, 31 and 35 above, and further in view of Bradley et al., (hereinafter Bradley), (US Patent No. 7,082,463).

Regarding claims 2, 20 and 32, Guha-Ng discloses the limitations as disclosed above except for the limitations of: each service level guarantee definition is implemented as a separate element in at least one Extended Markup Language (XML) document, the

element for the service level guarantee definition includes the performance criteria defined in the service level agreement, and wherein the application service connection definition for each of the I/O paths is implemented as an element the at least one XML document, wherein attributes of the application service connection definition element provide information on the I/O path. However, Bradley, discloses metric elements [Bradley, column 12, Table 4, column 9, line 29, 'Standardized Interface Templates' paragraph and column 7, lines 5-7] of an SLA using XML [Bradley, column 13, Table 5 and column 12, Table 4, metric]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate using metric elements of an SLA within XML format in order to allow for greater flexibility while creating and using SLA's.

Regarding claims 7, 24 and 36, Guha-Ng-Bradley further discloses including one element for each service group in an XML document [Bradley, column 12, Table 4, a metric], including one sub-element for each application service group [Bradley, column 12, Table 4], each sub-element including attributes [Bradley, column 13-23, see each table defining elements and sub-elements].

7. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guha-Ng-Bradley as applied to claim 36 above, and further in view of Koclanes et al., (hereinafter Koclanes), (US Publication No. 2004/0243699).

Regarding claim 37, Guha-Ng-Bradley further discloses the limitations as disclosed above except for the limitations of: providing a service level commitment record associating one service level agreement definition with the at least one application service group. However, Koclanes, discloses creating an SLA [Koclanes, paragraph 37, lines 1-5]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create an SLA in order to monitor the I/O of a system and provide service guarantee's.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guha-Ng as applied to claim 5 above, and further in view of Koclanes et al., (hereinafter Koclanes), (US Publication No. 2004/0243699).

Regarding claim 6, Guha-Ng further discloses the limitations as disclosed above except for the limitations of: providing a service level commitment record associating one service level agreement definition with the at least one application service group. However, Koclanes, discloses creating an SLA [Koclanes, paragraph 37, lines 1-5]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create an SLA in order to monitor the I/O of a system and provide service guarantee's.

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9. Claims 13-15 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guha-Ng as applied to claims 12 and 42 above, and further in view of Carlson et al., (hereinafter Carlson), (US Publication No. 2003/0135609).

Regarding claims 13 and 43, Guha-Ng further discloses the limitations as disclosed above except for the limitations of: the I/O demand comprises I/O operations per second per unit of contracted storage capacity and I/O throughput per contracted storage capacity. However, Carlson, discloses service level parameters that are monitored are members of a set of service level parameters that may include: a throughput in terms of bytes per second transferred between the at least one host and the storage; and an I/O transaction rate [Carlson, paragraph 19]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the load calculations within the SLA for monitoring in order to monitor the requirements of the SLA metrics.

Regarding claims 14 and 44, Guha-Ng-Carlson further discloses one of the I/O paths is under performing if a percentage of I/O response times measured for I/O path is less than a percentage guarantee indicated in the selected service level guarantee definition [Carlson, paragraph 126].

Regarding claims 15 and 45, Guha-Ng-Carlson further discloses one of the I/O paths is under performing if the I/O demand exceeds a demand criteria indicated in the service

level guarantee definition and a sampling of the determined I/O response time is less than a response time criteria indicated in the service level guarantee definition [Carlson, paragraph 126].

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM J. GOODCHILD whose telephone number is (571)270-1589. The examiner can normally be reached on Monday - Friday / 9:00 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on (571) 272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WJG
02/25/2008

/Jason D Cardone/
Supervisory Patent Examiner, Art Unit 2145